



# Volunteer Lake Assessment Program Individual Lake Reports

## WILLAND POND, SOMERSWORTH, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	288	Max. Depth (m):	11.2	Flushing Rate (yr <sup>-1</sup> )	0.3	Year	Trophic class	KNOWN EXOTIC SPECIES
Surface Area (Ac.):	86	Mean Depth (m):	4.7	P Retention Coef:	0.84			
Shore Length (m):	2,700	Volume (m <sup>3</sup> ):	1,627,000	Elevation (ft):	182			

### TROPHIC CLASSIFICATION

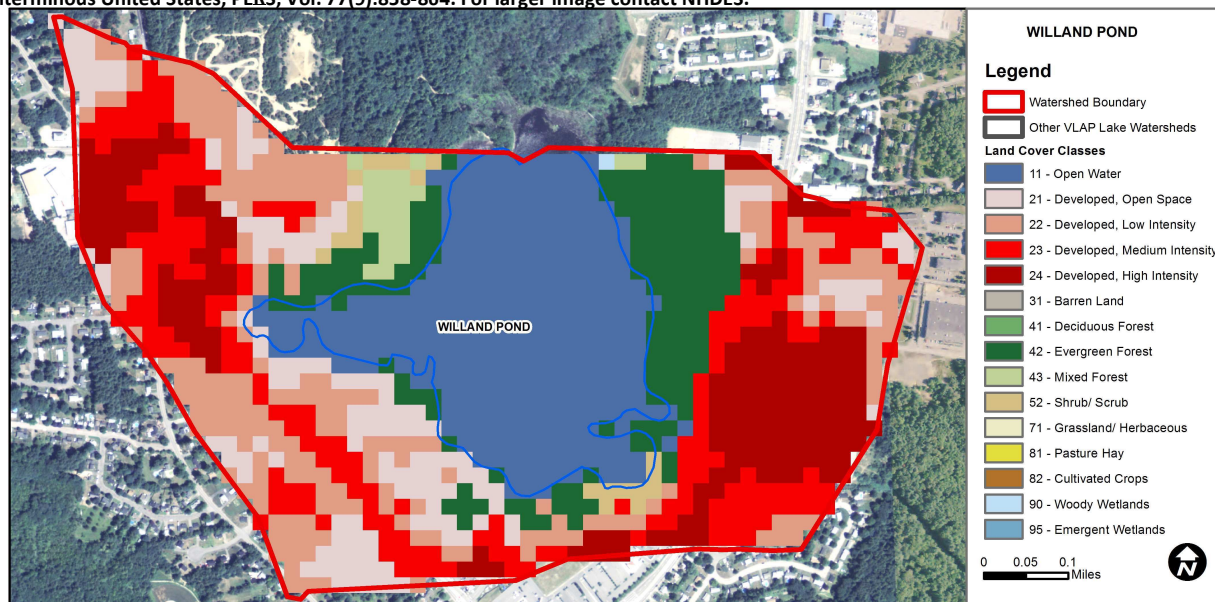
### KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Bad	>/=5 samples and median is >2x threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Bad	>/=5 samples and median is >2x threshold.
Primary Contact Recreation	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.

### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	24.2	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	10.9	Deciduous Forest	0	Pasture Hay	0
Developed-Low Intensity	17.6	Evergreen Forest	11.88	Cultivated Crops	0
Developed-Medium Intensity	16.1	Mixed Forest	1.81	Woody Wetlands	0.08
Developed-High Intensity	14.8	Shrub-Scrub	1.57	Emergent Wetlands	0



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

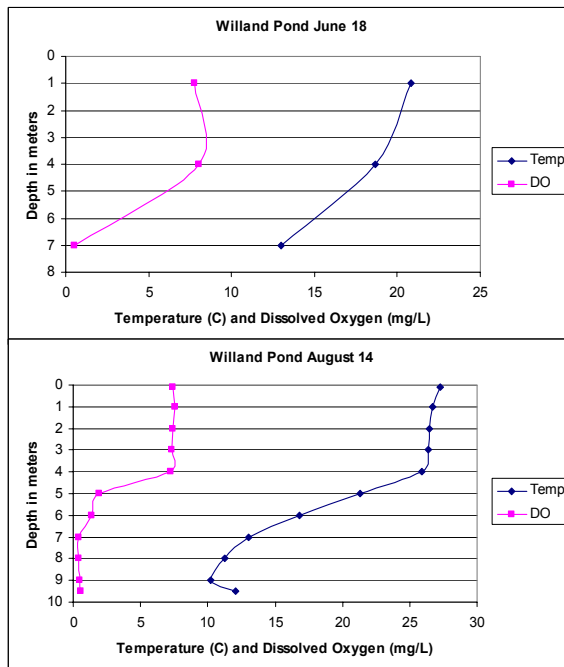
## WILLAND POND, DOVER/SOMERSWORTH, NH

### 2012 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- 🔥 **CHLOROPHYLL-A:** Chlorophyll levels increased slightly from June to July and remained stable in August. 2012 chlorophyll levels were the lowest measured since monitoring began and below the NH lake median. We hope to see this continue!
- 🔥 **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were elevated and indicative of the urbanized watershed.
- 🔥 **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) phosphorus remained stable throughout the summer, was below the NH lake median, and was the lowest measured since monitoring began. We hope to see this continue! Hypolimnetic (lower water layer) phosphorus was elevated throughout the summer likely due to the release of phosphorus from sediments under conditions of depleted oxygen.
- 🔥 **TRANSPARENCY:** Transparency improved greatly in 2012, was greater than the NH lake median, and was the highest measured since monitoring began due to the decreased algal growth. We hope to see this continue!
- 🔥 **TURBIDITY:** Epilimnetic and metalimnetic (middle water layer) turbidities were relatively stable throughout the summer. Hypolimnetic turbidity increased as the summer progressed due to the accumulation of organic compounds under conditions of oxygen depletion.
- 🔥 **pH:** pH levels were below the desirable range in the hypolimnion.
- 🔥 **RECOMMENDED ACTIONS:** There was a marked decrease in rainfall during 2012 and therefore a decrease in stormwater runoff to the pond. This positively impacted water quality as Willand Pond receives stormwater runoff from a heavily urbanized watershed.

#### Dissolved Oxygen & Temperature Profile



Station Name	Table 1. 2012 Average Water Quality Data for WILLAND POND							
	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu
						NVS	VS	
Epilimnion	4.43	4.03	60	212.3	9	4.48	3.65	1.03
Metalimnion				210.3	12			1.28
Hypolimnion				210.0	51			11.35

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** < 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

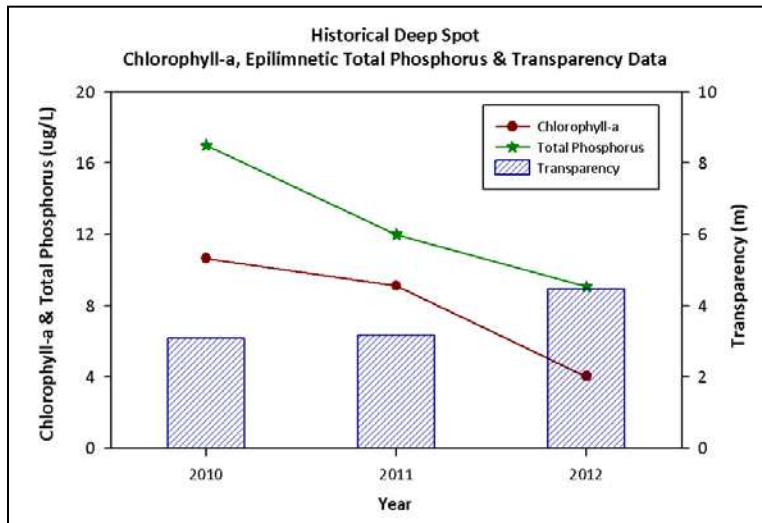
**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** 6.5-8.0 (unless naturally occurring)

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	N/A	Ten consecutive years of data necessary for trend analysis.
Transparency	N/A	Ten consecutive years of data necessary for trend analysis.
Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for trend analysis.



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:  
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